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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,838	03/12/2004	Ignor B. Gornushkin	T2315-908017US01	5022

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MILES & STOCKBRIDGE PC
1751 PINNACLE DRIVE
SUITE 500
MCLEAN, VA 22102-3833

EXAMINER
GEISEL, KARA E

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/798,838	GORNUSHKIN ET AL.
	Examiner	Art Unit
	Kara E. Geisel	2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 August 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0304*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed on March 12th, 2004 has been considered by the examiner.

Drawings

The drawings were received on August 30th, 2004. These drawings are objected to in that, as corrected, there are now two figure 7, and the corrected drawing is numbered 4/4, while the last page of the drawings filed on March 12, 2004 is also numbered 4/4. Correction is required.

Claim Objections

Claims 19-20 are objected to because of the following informalities: inconsistent wording.

In regards to claims 19-20, line 1, applicant discloses "output module", wherein, in claim 11, line 6, from which both of these claims depend, applicant discloses "output device".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-8 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claims 7-8, and 17-18, line 1, it is not clear which "multi-order spectrum" is being referred to. Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Wilson et al. (US Pubs 2002/0101587).

In regards to claim 1, Wilson discloses a material identification method comprising obtaining a multi-order spectrum from a sample (page 2, ¶s 33-35), comparing the multi-order spectrum to multi-order spectra for known compositions, and outputting an identification of the sample based on a correlation between the sample and the known composition (page 7, ¶ 129; while it is not explicitly disclosed that the identification is outputted, since the CTIS system is used for identifying a composition, it would be inherent to output this information in some way, for example via a display, a printout, or saved into a memory of a computer).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 6-8, 10-12, 16-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (US Pubs 2002/0101587) in view of Day et al. (USPN 5,508,525).

In regards to claim 2, Wilson does not disclose detail about how the identification of the sample is undertaken. However, identifying an unknown material is a well known problem in the art, and many methods have been created to deal with this problem, which include libraries to compare reference spectra to a measured spectrum and algorithms used by software for correlating the closest matching reference spectrum to the measured spectrum, and therefore, by identifying the material that the reference spectrum is associated with, identifying the material of the unknown sample. Any of these methods using comparison and correlation to identify a material would be suitable for Wilson's method.

For example, Day discloses a material identification method comprising obtaining a spectrum from a sample (column 1, lines 50-53), comparing the spectrum to spectra for known compositions (column 1, lines 53-59), and outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (columns 5-6, lines 53-67 and 1-3, respectively). Futhermore, Day discloses that if there are multiple spectra that are close to the measured spectra, one or more of the next closest identifications are outputted in order to allow the user to decide which identification is more probable (column 2, lines 30-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Wilson's output include one or more of the next closest identifications, if there were more than one reference spectra that was closely correlated to the measured spectrum, in order to allow the user to decide which identification is more probable.

In regards to claim 6, the comparison is performed against a spectral library in order to find the closest matching reference spectrum, and therefore, the material that the reference spectrum is associated with (Day column 2, lines 30-38).

In regards to claim 7, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum from the sample) comprises at least a first and a second order spectra (Wilson, fig. 3).

In regards to claim 8, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum for known compositions) comprises all spectra (interpreted as the entire library Day column 2, lines 30-43).

In regards to claim 10, the combined method would further include displaying a summary of the correlation (Day fig. 6).

In regards to claims 11 and 21, Wilson discloses a material identification system comprising a spectrometer adapted for obtaining a multi-order spectrum from a sample (fig. 12, and page 2, ¶s 33-35), comparing the multi-order spectrum to multi-order spectra for known compositions, and outputting an identification of the sample based on a correlation between the sample and the known composition (page 7, ¶ 129; while it is not explicitly disclosed that the identification is outputted, since the CTIS system is used for identifying a composition, it would be inherent to output this information in some way, for example via a display, a printout, or saved into a memory of a computer). It is not disclosed the means used for comparing and identifying. However any device could be used that could offer these features.

For example, Day discloses a similar device for identification of a material comprising a spectrometer for obtaining a spectrum from a sample (fig. 1, 10), a correlation module for comparing the spectrum to spectra for known compositions (fig. 1, 12 column 1, lines 53-59), and an output device (the monitor of fig. 1, 12) for outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (columns 5-6, lines 53-67 and 1-3, respectively). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use the correlation module, and output device of Day's material identification system as an embodiment of the means for comparing and outputting in Wilson's device.

In regards to claim 12, the combined output device would further output one or more next closest identifications based upon the correlation between the spectrum from the sample and the spectra for known compositions. Day discloses that if there are multiple spectra that are close to the measured spectra, one or more of the next closest identifications are outputted in order to allow the user to decide which identification is more probable (column 2, lines 30-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the combined output include one or more of the next closest identifications, if there were more than one reference spectra that was closely correlated to the measured spectrum, in order to allow the user to decide which identification is more probable.

In regards to claim 16, the comparison is performed against a spectral library in order to find the closest matching reference spectrum, and therefore, the material that the reference spectrum is associated with (Day column 2, lines 30-38).

In regards to claim 17, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum from the sample) comprises at least a first and a second order spectra (Wilson, fig. 3).

In regards to claim 18, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum for known compositions) comprises all spectra (interpreted as the entire library Day column 2, lines 30-43).

In regards to claim 20, the combined method would further include the output device cooperating with the correlation module for displaying a summary of the correlation (Day fig. 6).

Claims 3-11, and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (US Pubs 2002/0101587) in view of Gornushkin et al. ("Identification of Solid Materials by

Correlation Analysis Using a Microscopic Laser Induced Plasma Spectrometer"), as disclosed by applicant.

In regards to claims 3-4, Wilson does not disclose detail about how the identification of the sample is undertaken. However, identifying an unknown material is a well known problem in the art, and many methods have been created to deal with this problem, which include libraries to compare reference spectra to a measured spectrum and algorithms used by software for correlating the closest matching reference spectrum to the measured spectrum, and therefore, by identifying the material that the reference spectrum is associated with, identifying the material of the unknown sample. Any of these methods using comparison and correlation to identify a material would be suitable for Wilson's method.

For example, Gornushkin discloses a material identification method comprising obtaining a spectrum from a sample (page 5159, column 1, lines 10-19), comparing the spectrum to spectra for known compositions (page 5159, column 2, lines 7-17), and outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (page 5159, column 2, lines 7-17). Futhermore, Gornushkin discloses that the correlation could be a linear, or a rank correlation, and these correlations offer reliable identification of an unknown material (page 5164, conclusion). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Wilson's correlation include a linear and a rank correlation, in order to allow reliable identification of an unknown material.

In regards to claim 5, Wilson does not disclose building a library of spectra for the known compositions. However, in order for a measured spectra to be compared and correlated to a reference spectra of a known material, as disclosed, a library of the reference spectra has to be created.

For example, Gornushkin discloses building a library of spectra for known compositions in order to be able to later compare and correlate a measured spectra to the reference spectra in the library, in order to identify the material (pages 5158-5159 LIPS Libraries). Therefore, it would have been obvious to one

of ordinary skill in the art at the time the invention was made to include in Wilson's method a step of building a library of spectra for the known compositions, in order to be able to later compare and correlate a measured spectra to the reference spectra in the library, in order to identify the material.

In regards to claim 6, the comparison can be performed against a spectral library or a portion of the spectral library (Gornushkin page 5159, Results and Discussion).

In regards to claim 7, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum from the sample) comprises at least a first and a second order spectra (Wilson, fig. 3).

In regards to claim 8, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum for known compositions) can comprise all spectra (interpreted as the entire library Gornushkin page 5159, Results and Discussion).

In regards to claim 9, the method could output a correlation coefficient (page 5159, column 2, lines 7-17).

In regards to claim 10, the combined method would further include displaying a summary of the correlation (Gornushkin page 5159, column 2, lines 7-17).

In regards to claims 11 and 21, Wilson discloses a material identification system comprising a spectrometer adapted for obtaining a multi-order spectrum from a sample (fig. 12, and page 2, ¶s 33-35), comparing the multi-order spectrum to multi-order spectra for known compositions, and outputting an identification of the sample based on a correlation between the sample and the known composition (page 7, ¶ 129; while it is not explicitly disclosed that the identification is outputted, since the CTIS system is used for identifying a composition, it would be inherent to output this information in some way, for example via a display, a printout, or saved into a memory of a computer). It is not disclosed the means used for comparing and identifying. However any device could be used that could offer these features.

For example, Gornushkin discloses a similar device for identification of a material comprising a spectrometer for obtaining a spectrum from a sample (fig. 1, spectrometer), a correlation module for

comparing the spectrum to spectra for known compositions (fig. 1, laptop computer), and an output device (the monitor of the laptop computer) for outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (page 5159, column 2, lines 7-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the correlation module, and output device of Gornushkin's material identification system as an embodiment of the means for comparing and outputting in Wilson's device.

In regards to claims 13-14, Wilson does not disclose detail about how the identification of the sample is undertaken. However, identifying an unknown material is a well known problem in the art, and many methods have been created to deal with this problem, which include libraries to compare reference spectra to a measured spectrum and algorithms used by software for correlating the closest matching reference spectrum to the measured spectrum, and therefore, by identifying the material that the reference spectrum is associated with, identifying the material of the unknown sample. Any of these methods using comparison and correlation to identify a material would be suitable for Wilson's method.

For example, Gornushkin discloses a material identification method comprising obtaining a spectrum from a sample (page 5159, column 1, lines 10-19), comparing the spectrum to spectra for known compositions (page 5159, column 2, lines 7-17), and outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (page 5159, column 2, lines 7-17). Futhermore, Gornushkin discloses that the correlation could be a linear, or a rank correlation, and these correlations offer reliable identification of an unknown material (page 5164, conclusion). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Wilson's correlation include a linear and a rank correlation, in order to allow reliable identification of an unknown material.

In regards to claim 15, Wilson does not disclose having the output device adapted for building a library of spectra for the known compositions. However, in order for a measured spectra to be compared and correlated to a reference spectra of a known material, as disclosed, a library of the reference spectra has to be created.

For example, Gornushkin discloses adapting an output device of a material identification system for building a library of spectra for known compositions in order to be able to later compare and correlate a measured spectra to the reference spectra in the library, in order to identify the material (pages 5158-5159 LIPS Libraries). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt Wilson's output device for building a library of spectra for the known compositions, in order to be able to later compare and correlate a measured spectra to the reference spectra in the library, in order to identify the material.

In regards to claim 16, the comparison can be performed against a spectral library or a portion of the spectral library (Gornushkin page 5159, Results and Discussion).

In regards to claim 17, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum from the sample) comprises at least a first and a second order spectra (Wilson, fig. 3).

In regards to claim 18, the multi-order spectrum (as interpreted by the examiner as the multi-order spectrum for known compositions) can comprise all spectra (interpreted as the entire library Gornushkin page 5159, Results and Discussion).

In regards to claim 19, the output device could output a correlation coefficient (Gornushkin page 5159, column 2, lines 7-17).

In regards to claim 20, the output device cooperates with the correlation module to display a summary of the correlation (Gornushkin page 5159, column 2, lines 7-17).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Li (US Pubs 2003/0223059), and Knapp (US Pubs 2004/0001201).

Li discloses a device for identification of a material comprising a spectrometer for obtaining a multi-order spectrum from a sample, a correlation module for identifying the material, and an output device for outputting an identification of the sample.

Knapp discloses a device for identification of a material comprising a spectrometer for obtaining a spectrum from a sample, a correlation module for comparing the spectrum to spectra for known compositions, and an output device for outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9306 for regular communications and 703 872 9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory J. Toatley, Jr.
SPE
Art Unit 2877
9 May 05

K.G.
KEG
May 6, 2005